MARINE REVIEW.

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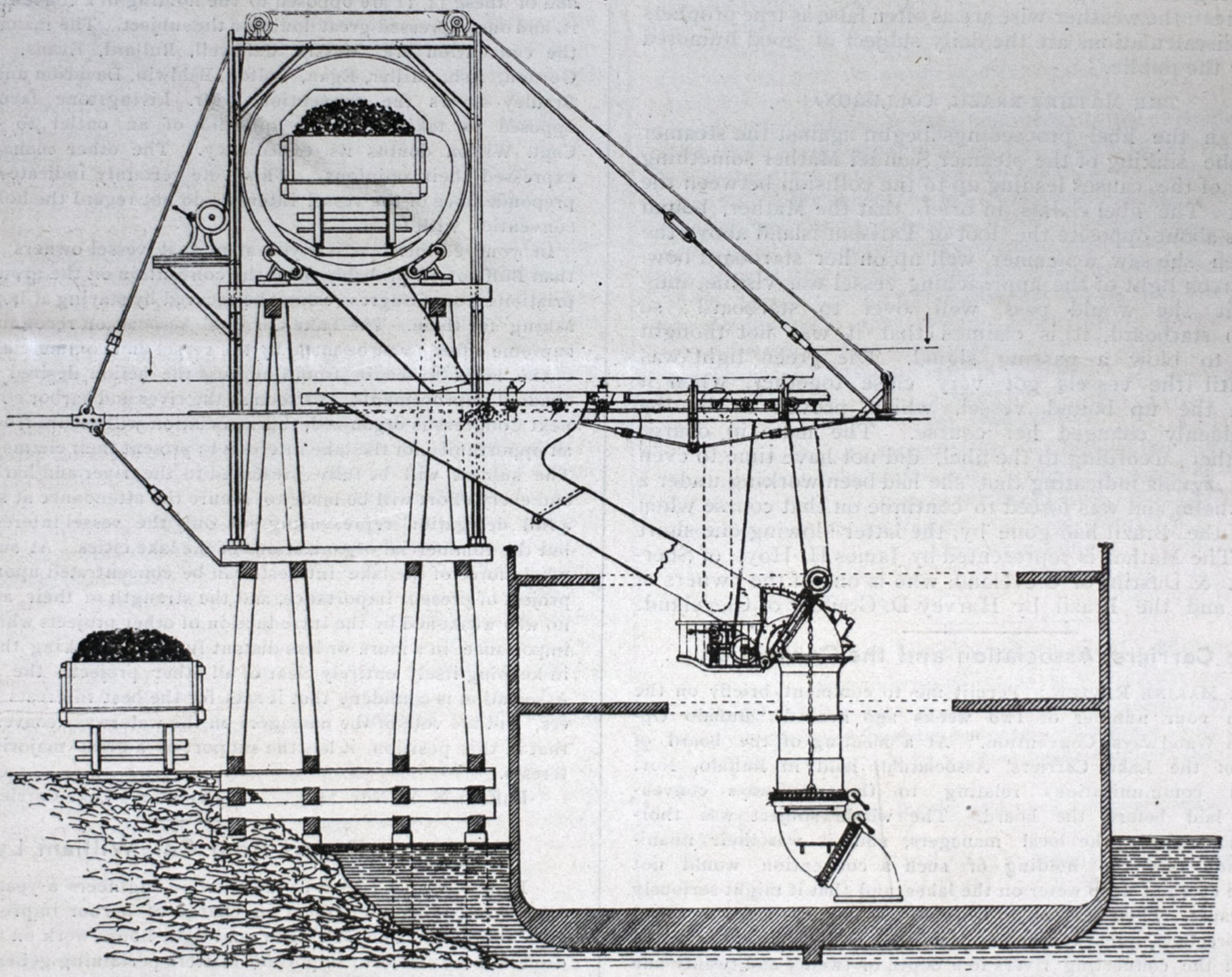
Coal Handling Apparatus.

OPERATED BY THF LINDSLEY TERMINAL EQUIPMENT COMPANY, CLEVELAND, OHIO.

The success of most inventions hinges on their simplicity—that is the most valuable machine is the one that does its work with the least possible expense. The simplest way to empty a bucket of coal is to turn it upside down. There has been building for some time in the shops of the Cleveland Ship Building Company a machine for handling coal that embodies that simple principle—it turns the car upside down. There is plenty of work for coal handling machinery on the lakes, as 3,107,816 tons of soft coal was shipped from Ohio ports alone last season. No big claims are made for this machine, illustrated herewith,



COAL HANDLING MACHINERY.

but it is geared to turn over in two minutes. If it turns in three minutes it will do all that is expected, and even if five minutes were required, that would insure the largest vessels getting cargoes in from eight to nine hours, whereas two days is now considered good time for placing coal cargoes aboard the larger steamers. Following is a brief description of the apparatus:

Upon a trestle of suitable height is mounted a cylindrical crib which is so constructed as to be rotated upon its longitudinal axis. Within the crib is a section of track mounted upon heavy jack-crews by means of which a car may be raised and clamped against a series of bolts projecting over the top of the car body. Heavy clamps extending the length of the crib are then brought into adjustment against the side stakes, thus rigidly securing the car within the cylinder. The upper portion of the crib is provided with a number of yokes which forms the ways for a series of sliding shutters and at the same time carry a pair of steel plates, which with the shutters serves as a roof or a cover for the coal, holding it in position until the car is inverted, when by drawing the shutters the entire load drops in a mass to a fixed hopper immediately beneath. The power required for the various operations is obtained from a small engine elevated conveniently on a frame work at one end of the cylinder, and is transmitted to the various shafts by a novel arrangement of gearing.

Under the fixed hopper referred to is arranged a chute provided with adjustments by means of which the discharge end can be lowered to the bottom of a vessel and be then operated over a wide range for trimming the cargo. By means of a valve of peculiar construction at the lower end of the chute the flow of the coal is kept under perfect control, and the hopper and chute being kept full, the fall and consequent breakage is reduced to a minimum. In the plant now under construction the cars will be raised to the level of the machine by means of an incline and haulage engine, and passing through the machine will run down an incline by gravity at the opposite end of the trestle.

The Lindsley Terminal Equipment Company, owners and operators of the patent, already have the assurance of a large amount of tonnage for the coming season and are pushing their construction as rapidly as possible in anticipation of further requirements in the near future.

Some Lake Admiralty Affairs.

On account of the organization recently of the new appellate courts in Chicogo, Cincinnati and other places, the impression has gone out that the new judges for these courts have been appointed. This is not so, however, and there will be no appeals to these courts of final jurisdiction in admiralty cases until after July 1 next. An organization was, of course, perfected according to law several weeks ago by the present circuit and district judges who are authorized associates in the new courts.

It was thought when Circuit Judge Jackson held court in Detroit a few days ago that several cases other than that of Vance et. al. vs. the steamer Wilhelm, involving liability for the loss of the schooners Midnight and Mears, would have been heard. Among them was the famous North Star-Sheffield collision case and also the Ranney-Merrick collision case. The inability of Mr. Rae of Chicago to appear was the cause for postponement in the first of these cases. Attorney Canfield of Detroit, acting for the Merrick, was also unable to appear. Judge Jackson has not as yet given his decision in the case of Vance against the Wilhelm. This was one of the cases heard by District Judge Eli S. Hammond of Nashville, Tenn., about the time that Judge Swan of Detroit was appointed to office. It was in the discussion of this case that Judge Hammond said: "From the ancient ground hog to the modern superintendent of the weather bureau the weather-wise are as often false as true prophets and their miscalculations are the daily subject of good humored derision by the public."

THE MATHER-BRAZIL COLLISION.

Through the libel proceedings begun against the steamer Brazil for the sinking of the steamer Samuel Mather something is learned of the causes leading up to the collision between the two boats. The libel claims, in brief, that the Mather, bound down, was about opposite the foot of Parisian island above the Sault, when she saw a steamer well up on her starboard bow. Only the green light of the approaching vessel was visible, indicating that she would pass well over to starboard; so far over to starboard, it is claimed, that it was not thought necessary to blow a passing signal. The green light was shown until the vessels got very close together, when it is claimed the up bound vessel, which proved to be the Brazil, suddenly changed her course. The mate in charge of the Mather according to the libel, did not have time to even blow two signals indicating that she had been working under a starboard helm and was forced to continue on that course when the bow of the Brazil had gone by, the latter blowing one short whistle. The Mather is represented by James H. Hoyt, of Sherman, Hoyt & Dustin of Cleveland, who is one of the owners of the boat, and the Brazil by Harvey D. Goulder of Cleveland.

Lake Carriers' Association and the Convention.

EDITOR MARINE REVIEW: Permit me to comment briefly on the editorial in your number of two weeks ago headed "Buffalo Opposed to a Waterways Convention." At a meeting of the board of managers of the Lake Carriers' Association, held in Buffalo, Nov. 14, several communications relating to the waterways convention were laid before the board. The whole subject was thoroughly discussed by the local managers, and it was their unanimous opinion that the holding of such a convention would not advance the cause of deep water on the lakes, and that it might seriously injure the cause. Their reasons for this opinion were as follows: That the great, practical, present need of the lakes is the deepening of the channels in the connecting rivers to a depth of twenty and twenty-one feet, as recommended by General Poe in his report; that every energy of the vessel interests ought to be directed to secure from Congress at the coming session action which will insure the rapid and continuous prosecution of this work and the appropriation of as much money as can be spent thereon during the two years to be covered by the next river and harbor bill; that the proposed deepening of the channels is a work of sufficient magnitude to demand the entire energy of the United States government in lake waterway improvement for several years to come; that while the action of Congress in the past has made it certain that at some time the lake waterways will be available for a twenty foot draft, it depends wholly upon the vessel interests and the skill with which they bring their concentrated energy to bear on Congress to determine when that channel shall become a fact; that until Congress has taken definite action which will secure beyond any question the rapid prosecution of this work under sufficient appropriations, every other project should be left entirely alone. To use the words of the president of the Cleveland Vessel Owners' Association in his letter to the Lake Carriers' Association on this subject, "It would not only be unwise but sheer folly to bring forward a measure for a deep channel to the sea-coast at this time." Now, inasmuch as all the newspapers have stated again and again that it is the purpose of the proposed waterways' convention to consider and take action upon a deep channel from the lakes to the seaboard, and inasmuch as it has been repeatedly stated by those favoring such a convention that this was to be its great work, and that action upon the twenty-foot channel recommended by Gen. Poe was to be considered as of secondary importance, all the managers present at the meeting felt that such a convention would do serious damage. In bringing forward a project requiring far greater expenditure than any waterway improvement ever undertaken by the government, it would tend to create in the minds of congressmen an impression that the demands of the lake interests were unlimited. It would tend to scatter the fire which the lake interests must direct upon congress at its next session. It would give undue prominence to what should be considered an entirely subordinate issue, and by so doing would greatly detract from the force of the demand of the lakes for the immediate deepening of the river channels. Furthermore, the managers regarded it as inevitable that such a convention would be flooded with projects for large local expenditures for harbors, which expenditure should not be asked until definite action has been taken by congress on the twenty-foot channel.

For the purpose of seeing whether these views were shared by all the managers of the association, the secretary was directed to take a vote on this subject by mail. Out of the twenty managers, 14 have responded and of these 14, 11 are opposed to the holding of a convention, two favor it, and one expressed great doubt on the subject. The managers opposing the convention are Messrs. Caldwell, Bullard, Evans, Firth, Henry, Gordon, Ash, Miller, Egan, Colton, Baldwin, Davidson and Hanna. Mr. Bradley favors the convention. Mr. Livingstone favors it, but is opposed to taking up the question of an outlet to the seaboard. Capt. Wilson doubts its expediency. The other managers have not expressed their opinions. This vote certainly indicates that a great preponderance of the vessel interests do not regard the holding of such a convention with favor.

In your editorial article you state that vessel owners at other places than Buffalo will probably favor the convention on the ground that appropriations from Congress cannot be secured by staying at home and simply asking for them. The Lake Carriers' Association recognizes fully that a supreme effort must be made by the vessel and commercial organizations of the lakes to secure from Congress the action desired with respect to channel improvements. As soon as the river and harbor committee of the next Congress is organized, this association will secure from its chairman an opportunity for the lake interests to present their claims in this matter. The subject will be fully presented to the river and harbor committee, and every effort will be made to secure the attendance at such hearing of a full delegation representing not only the vessel interests of the lakes but the commercial organizations of the lake cities. At such hearing the whole force of the lake interests can be concentrated upon the one great project of present importance, and the strength of their attack will be in no way weakened by the introduction of other projects which may assume importance in a more or less distant future. In taking this course, and in keeping itself entirely clear of all other projects, the Lake Carriers' Association is confident that it acts for the best interests of vessel owners, and the vote of the managers on the waterways convention indicates that in this position, it has the support of a great majority of those interests.

C. H. KEEP,
Secretary, Lake Carriers' Association.

Buffalo, N. Y. Nov. 24.

Valuable Report from Col. William Ludlow.

In his annual report to the chief of engineers a year ago, Col. Wm. Ludlow of Detroit, engineer in charge of harbor improvements on the east shore of Lake Michigan and light-house work on the upper lakes, discussed a number of important matters pertaining generally to the lake marine. His report for the fiscal year ended June 30, 1891, is again especially interesting among those received at Washington from the members of the engineering corps on the lakes. Although the report pertains more especially to Lake Michigan harbors, its considerations apply to general navigation. Under the heading "General Remarks" Col. Ludlow says:

"The conditions unfavorably affecting general navigation on Lake Michigan, and especially the sandy shores and harbors of the east coast, which were noted in the annual report for 1890 (pp. 2608-9) have been continued during the past year, and a comparison of the lake levels from January to June shows that the lake surface has averaged a tenth of a foot lower in 1891 than for the corresponding period in 1890. Meanwhile the development of the lake commerce has continued to show an increase in the number of vessels engaged in the traffic, and particnlarly in the dimensions and draft required for advantageous loading.

"The census of 1890 took account of these changes, and the published data make it practicable to furnish some illustrations that are of value in connection with matters relating to the construction and improvement of

the lake harbors. The total freight tonnage on the lakes in 1889 is stated at 27,500,000 tons, of which mineral products constitute 53 per cent., lumber products 25 per cent., farm products 16 per cent. and miscellaneous 6 per cent. Taking account of distances carried, the aggregate movement of freight on the lakes is given at 15,518,000,000 of ton miles, an amount equal to 23 per cent. of the ton mileage of the entire railway system of the country. Of the total lake traffic, Lake Michigan is to be credited with over 36 per cent., transporting 28 per cent. of the mineral freights, 52 per cent. of the lumber and 41 per cent. of the food products.

"The statistics in regard to the lake marine engaged in this enormous carrying business, which directly affects the cost, throughout the country, of three prime staples, viz. food, fuel and building materials, and which is conducted at an expense represented by a mere fraction of that of land transportation, are no less interesting and remarkable. The following table gives the comparative data for the years 1886 and 1890, during which a practical revolution in the construction of lake vessels has taken place. Classed as steamers or sailing vessels there were:

In 1886.	Number.	Tonnage.	Value.
Steam	937	324,885	$22,047,200
Sail	1060	309,767	8,550,250
Total	1997	634,652	$30,597,450
In 1890.			
Steam	1153	523,702	$48,434,350
Sail	902	302,658	9,694,150
Total	2055	826,360	$58,128,500

"The increase in the four years is in number fifty-eight, in tonnage 191,708, and in value $27,531,050. In other words, while the increase in actual numbers is but about 3 per cent., the tonnage has increased 30 per cent. and the total value no less than 90 per cent.

"Classed according to the materials of construction the exhibit is equally significant:

	Steel.	Iron.	Composite.	Wood.
1886	6	35	2	1954
1890	68	39	13	1935

"The line along which the ship building interests on the lakes have proceeded is evident. Wooden vessels still constitute the bulk of the lake marine, but have slightly decreased in number. The "liners" of 1,000 to 3,000 tons burthen are now built mainly of steel throughout, and in part composite, viz. with steel frames planked with wood, or with metal bottoms and wood above water. These vessels in point of carrying capacity, speed and safety are models of the art, and in construction and equipment for the special conditions of lake transportation leave nothing to be desired. They ply the narrow and intricate channels of the lake system, with speed and confidence, under conditions that would appall a navigator accustomed only to the open traffic of the ocean, and need for their full utilization channel and harbor facilities adequate to their capacity, Aside from these prominent types of lake carriers, however, there still remain the much greater number of vessels of a smaller class whose requirements as to draft are more moderate, but which also need better means of entrance to harbors and more favorable channel depths through which to transport their freights. These in fact constitute the bulk of the commerce between the ports in any one lake, and in the case of Lake Michigan in particular, lying entirely within the jurisdiction of the United States, this trans-lake commerce has become a factor of the first importance.

"The land routes eastward from the mines and wheat fields of the northwest must pass around Lake Michigan to the southward and with the multiplicity of railways entering at Chicago, the movement of freight through that city and across the interminable lines of rail has become excessively tedious and any considerable increase in its volume well nigh impracticable. In these circumstances relief must be had by the establishment of freight lines across the lake, connecting points on the west and east coasts. Such lines are already in existence, notably between Grand Haven and Milwaukee and between Manistee and Ludington in Michigan, and Milwaukee and Manitowoc in Wisconsin. Additional lines are projected and in part established, and more will follow. The peculiarly favorable feature of most of the harbors on the east coast is the existence of numerous lakes lying inside the land and connected with Lake Michigan by narrow channels which have been improved to entrance harbors by piers and dredging. These interior lakes are deep and capacious, with every natural advantage for the construction of freighting facilities, and need only the adequate enlargement and deepening of the entrances to open them to the heaviest vessels that ply the lakes. It is the present need of commerce in the lake region that the channels and harbor entrances be made to correspond with the advances and development of the vessels, for the use of which they were originally designed and constructed. This will involve, in many cases, very considerable additions to the entrance dimensions and to the cost of construction and maintenance, but against this must be set the enormous value of the commerce in question, and the economic advantages of reducing the cost of transportation on articles of universal necessity, such as the lake must furnish the medium for conveying from producer to consumer.

"It should be noted that while commerce generally is suspended during the winter, the season of open navigation lasting about seven and a half months, the trans-lake traffic in Lake Michigan continues throughout the year, notwithstanding the storms and ice of winter, and experience has shown that if suitably constructed, the vessels engaged in this trade have no special difficulty in making their trips and that the winter business in volume and value is often in excess of the summer business for the lines in question. This naturally results from the fact that the ordinary lines of water transport are closed, and the land lines passing south of the lakes are gorged with freight. The conditions in this respect are manifestly such as to indicate the need and probability of the establishment and maintenance of several trans-lake routes.

"Another matter in respect of the harbors is of importance and should receive attention. The harbor works on the lakes consist of piers and revetments of timber and piling filled with stone and decked over. Near the end of the pier is usually a light-house and fog-signal connected with the shore by an elevated walk above the pier, to permit the keepers to reach the light in heavy weather. These structures are all of wood, generally white pine, and lying out in the sun become as dry and inflammable as tinder. The width between the piers is usually from 150 to 200 feet, and the steam vessels constantly plying in and out, many of them burning wood, set fire to the piers with great frequency, thereby endangering the harbor works and light-houses, which are essential to commerce. At a few ports local ordinances or regulations have been made, with the object of controlling the carelessness and recklessness of the vessel masters and owners, but in the great majority of cases there is no local authority that can deal with the matter at all, and the only recourse is federal supervision and control.

"Perhaps a still more important matter is that of regulating the speed with which vessels should traverse the narrow entrances. The suction acts destructively on the harbor works and shore constructions, and adds materially to the annual charges for repair and maintenance. Aside from this, frequent damage is done to vessels, dredges, tugs, etc., both in private employ and engaged in government work at the harbors, by the rapid passage of a large vessel. Lines and spuds are broken and the vessels set adrift. There is no local authority that can regulate these matters, and the sole remedy is such legislation as shall enable the secretary of war to make and enforce the regulations necessary to protect the general interests against the recklessness of individuals."

A Correction.

EDITOR MARINE REVIEW: In your issue of the 26th inst. an error occurs in the statement of the delay to shipping, caused by the sinking of the steamer Susan E. Peck in St. Mary's river. The total delay amounted to 827 days and 5 hours, instead of 327, etc., as printed.

Very respectfully, O. M. POE,
Colonel, Corps of Engineers,
Bvt. Brig. General, U. S. A.

Detroit, Mich., Nov. 27.

The Great Northwestern Grain Movement.

Special Correspondence to the MARINE REVIEW.

DULUTH Minn., Dec. 3.—Although wheat receipts dropped off several hundred thousand bushels last week, shipments were the heaviest on record, amounting to over 3,348,000 bushels, an average of nearly a half a million bushels a day.

The grain record for the past week compared with other weeks was as follows:

	Receipts, bu.	Shipments, bu.
Last week	2,118,688	3,348,729
Previous week	2,490,090	2,169,648
Corresponding week, 1890	1,028,383	1,081,223

Assuming 700,000 bushels as the amount of wheat to go out this week the lake shipments will be as follows, for the season:

Months	Bushels
May	3,831,841
June	1,595,997
July	1,744,358
August	1,305,825
September	6,410,370
October	6,694,741
November	10,973,084
December	400,000
Total	32,966,266

The largest previous shipments in one season from the head of the lake were 19,532,500 bushels in 1887. On the new crop, since ths first of September 24,478,255 bushels have been shipped. In 1889 in the last three months of navigation the shipments were 10,387,772 bushels and it was then thought a phenominal record had been made.

CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 210 So. Water Street, CHICAGO, Ill., Dec. 3.

Chicago will be well represented at the waterways' convention at Detroit. The sentiment here is strongly in favor of the convention and its objects. The gathering ought to have been held in Chicago, but for many reasons that was impracticable. Detroit was certainly the next best place for it.

The marine has been full of surprises the latter half of the season. Less than a month ago Chicago tug men were worrying over the winter fleet and where it was to be put. They estimated a fleet of 15,000,000 bushels capacity, and it did not seem that their estimates were far out of the way. Now it is found that not half as many boats will winter here as was predicted. In fact the winter fleet will be the smallest in years. The marine men who have not troubled themselves about the morrow, but have made most of the present, are the gainers this season. Sometimes they come out behind.

Carr's marine news bureau closes the season next Saturday. It began with four Chicago dailies—Tribune, Inter Ocean, Herald and Evening Post. It ends with eight dailies, five morning and three evening papers, all the journals that pretend to print the news. Since September additional help had to be secured in order to get up a creditable report. In every way the season's business of the bureau has been satisfactory, and all the papers taking its service will continue next year.

No Iron Plant for Milwaukee.

Special Correspondence to the MARINE REVIEW.

MILWAUKEE, Wis., Dec. 3.—Simultaneously with the announcement that W. H. Wolf had retired from business and that the two local shipyards had been placed under one management, it was given out that the establishment of a steel shipbuilding plant was an important object the new corporation had in view. This report, it is now claimed in certain quarters, emanated from talk ascribed to Com. Wolf while engaged in picking up some small blocks of outside stock before closing his deal. Indications, however, render it extremely doubtful whether such a scheme has for a single moment been seriously contemplated by the present management. They may put things in shape for the repair of damage sustained by steel vessels, which will require but little machinery additional to what they now possess, but that they have no intention of putting in a plant for building steel vessels and entering into competition with the mammoth plants already in existence at other points, the plans already matured and about to be carried into effect afford convincing proof. Chief among these plans is the abandonment of that portion of the south yard south of Washington street, where the large steamers R. P. Flower, W. H. Wolf, Thomas Davidson, Fred Pabst and Ferdinand Schlesinger were built, and the location of the building plant north of Washington street, on the south side of the slip occupied by the sectional docks, after the structures which now occupy the ground have been removed. This slip is about 300 feet long, and can be lengthened 50 or 75 feet whenever it may be deemed necessary. The property south of Washington street, which it is proposed to vacate, is between 400 and 450 feet long and about 150 feet wide, and may be leased by the Northwestern Fuel Company, which is seeking to extend its facilities for handling coal at that point. Then again it has been proposed to do away with the sectional docks at the west yard and lease or sell the lot fronting on the Holton canal and extending from canal street to the main river. Thomas Davidson, however, is opposed to this scheme and may carry his point. Should it be carried into effect no building whatever, except of very small craft, could in future be done at the west yard, while at the south yard there will be room for the construction of only one large vessel at a time. Thus it will be seen that the present dry dock company has not the remotest idea at present of entering into competition with yards located elsewhere on the lakes for the construcfton of modern steel vessels. To tell the truth, Milwaukee will never become an important shipbuilding point. There was a time when she could have been placed in the front rank in that direction, but the conservative coarse of Com. Wolf, taken in connection with a marked determination to enforce his own peculiar ideas upon those who wished to have vessels built, operated as a set back from which recovery is now almost impossible. But Com. Wolf was not alone in his conservatism. It extended also to the old Milwaukee Shipyard Company, and for years past neither establishment has taken kindly to outside building contracts because of fear of strikes and other adverse influences. In fact, Milwaukee lost the only opportunity ever presented to her for the possession of a steel shipbuilding plant when the Globe Iron Works Company decided to locate its branch establishment at South Chicago. Jones island, at Milwaukee, undoubtedly would have served the purpose of the Globe Company far better, and from hints occasionally thrown out the Globe people, or a cousiderable portion of them at least, are now of that opinion. However, they are a fixture at South Chicago, and Milwaukee will have to remain out in the wet for a long time unless, perchance, in the dim and distant future, outside parties with more money than they know what to do with shonld see fit to locate a plant here. That local capital will ever enter into such a scheme is seemingly out of the question.

A good one is being told here at the expense of the captain of a large steamer of the Milwaukee fleet—a man reputed for breeziness of a decidely refreshing nature. Thanksgiving day, when along the north shore of Lake Superior the mercury was racing madly in the direction of the thirty degrees below zero mark, he wired the managing owner from Buffalo: "Will be unloaded Friday. Can get 12 cents on wheat from Port Arthur. You make the charter and I will make the trip, sure." The managing owner, who is accredited with great shrewdness, swallowed the bait and expressed the most profound regret that the golden opportunity could not be grasped because the steamer lacked proper ironing for an encounter with ice. Of course the captain knew that the trip could not be undertaken for this very reason, but no doubt reasoned that the opportunity to make himself solid for another season's engagement must not be lost because of so slight a drawback.

The Wadena on the Atlantic.

Special Correspondence to the MARINE REVIEW.

OGDENSBURG, N.Y., Dec. 3.—The steel steam yacht Wadena was hauled out on the Ogdensburg marine railway here and was pontooned by Geo. Hall & Co. The pontoons, 40 by 14 feet made of pine, were placed under her stern, and the yacht's draft was changed from 7 feet forward and 10 feet 9 inches aft to 7 feet 6 inches and 8 feet respectively. She left here Sunday and ran the Galoup rapids Monday. This was a test for the pontoons but they never budged. Vice-president Wallace of the Cleveland Ship Building Company and Capt James Lowe, who took command of the yacht here in place of Sereno Dayton, said that it was a most exciting experience. After the pontooned Wadena had passed through twenty-seven locks she reached Lachine basin and the pontoons were released. From there to Quebec Engineer Smith made a nice run, turning up 15 miles an hour with 100 pounds of steam and arriving there Saturday. She left Monday for Boston wilh James Lowe as master and Bernier as pilot. It is expected that she will reach Boston next Monday. Within twenty-four hours after Mr. Wallace arrived forty men were at work on pontoons.

New Canadian Boats.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., Dec. 3.—During the winter Capt. Noonan will build a new steamer for the route between here and Ottowa to cost $15,000. The Calvin Company will also build a vessel during the winter. She will carry about 30,000 bushels. The steamer North King, built last winter to ply between Charlotte and Port Hope, will be docked here and have her false sides removed and replaced by sides of a different pattern. Her speed will be increased.

The new range lights for the harbor will be placed in position early in the spring. The steambarge Ceylon struck a rock near the Sisters, but, although leaking badly, she succeeded in reaching Clayton. The E. H. Rutherford, while in the narrows, above Brighton, went aground in allowing another boat to pass. She had to jettison 1,500 bushels of barley before she floated off. The Bullock which went ashore near Collinsby, was hauled off without sustaining any damage.

While the forwarders have had a busy season, some owners here have not. The Calvin Company put some of their timber vessels into the grain trade, expecting to be able to make up for the poor season in timber, but they had hard luck and their anticipations were far from realized. The D. D. Calvin and tow, however, secured a load at Port Arthur for Buffalo last week.

Official Numbers and Tonnage.

The bureau of navigation, W. W. Bates commissioner, assigned official numbers to the following lake vessels during the week ending Nov. 21: Steam—Major Dana, Grand Haven, 52.57 tons gross, 26.29 net, No. 92,385. Unrigged—117, Buffalo, 1,310.82 tons gross. 1,265 92 net, No. 53,271. Barge, 118, Buffalo, 1,310.82 tons gross, 1,265.92 tons net, No. 53,272.

The Providence and Stonington Line, Long island sound steamboat company, proposes an innovation in the introduction of steel screw propellers on the sound where sidewheel steamers have so long held sway. The first of two propellers building for the company was launched by the Harlan and Hollingsworth Company at Wilmington, Del., a few days ago. The boats are 300 feet long and will have inverted, direct acting, surface condensing, triple expansion engines with four cylinders 28, 45, 51 and 51 inches diameter by 42 inch stroke. The propeller is of cast iron, left-handed, four bladed and 13½ feet in diameter.

Write "MARINE REVIEW, 510 Perry-Payne Bldg., Cleveland, O.," on an envelope, write your address on a slip of paper, enclose a dollar bill, and mail it for six month's subscription to the only illustrated marine paper on the lakes.

Record of Speed and Big Cargoes.

[*Masters or owners are invited to report improvement on this list.*]

Iron ore: Lake Michigan—Maryland, Inter-Ocean Transportation Company, of Milwaukee, 3,322 gross, or 3,737 net tons, Escanaba to South Chicago, draft 16 feet 6 inches; E. C. Pope, Eddy Bros. of Bay City, 3,239 gross, or 3,628 net tons, Escanaba to Buffalo, draft 16 feet. Lake Superior—E. C. Pope, Eddy Bros. of Bay City, 2,828 gross, or 3,167 net tons, Ashland to Lake Erie, draft 14 feet 6 inches.

Grain: E. C. Pope, Eddy Bros. of Bay City, 125,730 bushels of corn, draft 14 feet 8 inches; Western Reserve, Peter Minch, of Cleveland, 112,431 bushels of wheat, Chicago to Buffalo; W. H. Gilcher, J. C. Gilchrist, of Cleveland, 114,982 bushels of corn, Chicago to Buffalo.

Speed: Owego, Union Line, of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Saranac, Lehigh Valley Line, of Buffalo, Buffalo to Lime-Kilns, 240 miles, 15 hours and 10 minutes, 16 miles an hour.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	$100 00	$.....	$ 80 00
Champion Iron Company.....	25 00	.....	76 00
Chandler Iron Company.....	25 00	41 00	.....
Chicago and Minnesota Ore Company.....	100 00	.....	.....
Jackson Iron Company.....	25 00	.....	105 00
Lake Superior Iron Company.....	25 00	.....	.....
Minnesota Iron Company.....	100 00	.....	81 00
Pittsburg Lake Angeline Iron Co.....	25 00	.....	145 00
Republic Iron Company.....	25 00	25 00	26 50
Ashland	25 00	.....	.....
Section Thirty-three.....	25 00	6 00	.....
Brotherton.....	25 00	2 00	2 50

The report from Tower, Minn., that Mr. D. H. Bacon will take the presidency of the Chandler mine and that Joseph Sellwood, general manager, would retire is authoritively denied in Cleveland. Col. James Pickands of Pickands, Mather & Co. says there is no truth in the story. Dealings in mining shares are very dull, and there is little hope of improvement until the iron market warrants purchases of ore for next season at better prices than those that have ruled duriug the past several months. Owners of stocks agree with other iron interests that the prospects for the coming year are much better than they were at the close of 1890, and they are holding their securities in accordance with this belief. The report of a fire in one of the shafts of the Lake Superior mine caused some anxiety among holders of shares in that company, but Mr. Hall, general manager of the mine, who was in Cleveland early in the week, gave assurance that the fire had been confined to the shaft and was of little importance. Working forces are being increased in the mines of the Wisconsin Central syndicate and other properties on the Gogebic range where little work has been done during the past season. Stockholders in the Mountain Iron Company and the Biwabik mine, new Mesaba range properties, have agreed to turn over large amounts of stock in the mines to parties contemplating the construction of a railway from the new range to Duluth on Superior.

The Cincinnatti Iron Company has filed articles of incorportation with the register of deeds at Tower, Minn. The capital stock is $3,000,000 divided into 120,000 shares at $25 each. The incorporators are Lewis Pritchard, Frank Woodman and A. E. Humphries of Charleston, W. Va. and John McKinley and James T. Hale, of Duluth. Explorations are at present being carried on near the Biwabik mine, one of the new Mesaba properties.

M. Ferdinand Van Bruyssel, Belgian consul general to Canada, and M. Gerard Macquet, an attache of the engineering corps of the Belgian government, have been examining iron properties in the vicinity of Port Arthur, Ont., in the interest of a Belgian syndicate which they represent. They have consulted owners and lessees with a view to building a railway to the Atikokan range.

With full reports of lake shipments of ore from Two Harbors for the season, the Vermillion range has made a total output of 885,521 gross tons, an increase of 14,673 tons over 1890. The Chandler's increase over last year's shipments is 36,525 tons, while the Minnesota falls short 11,008 tons.

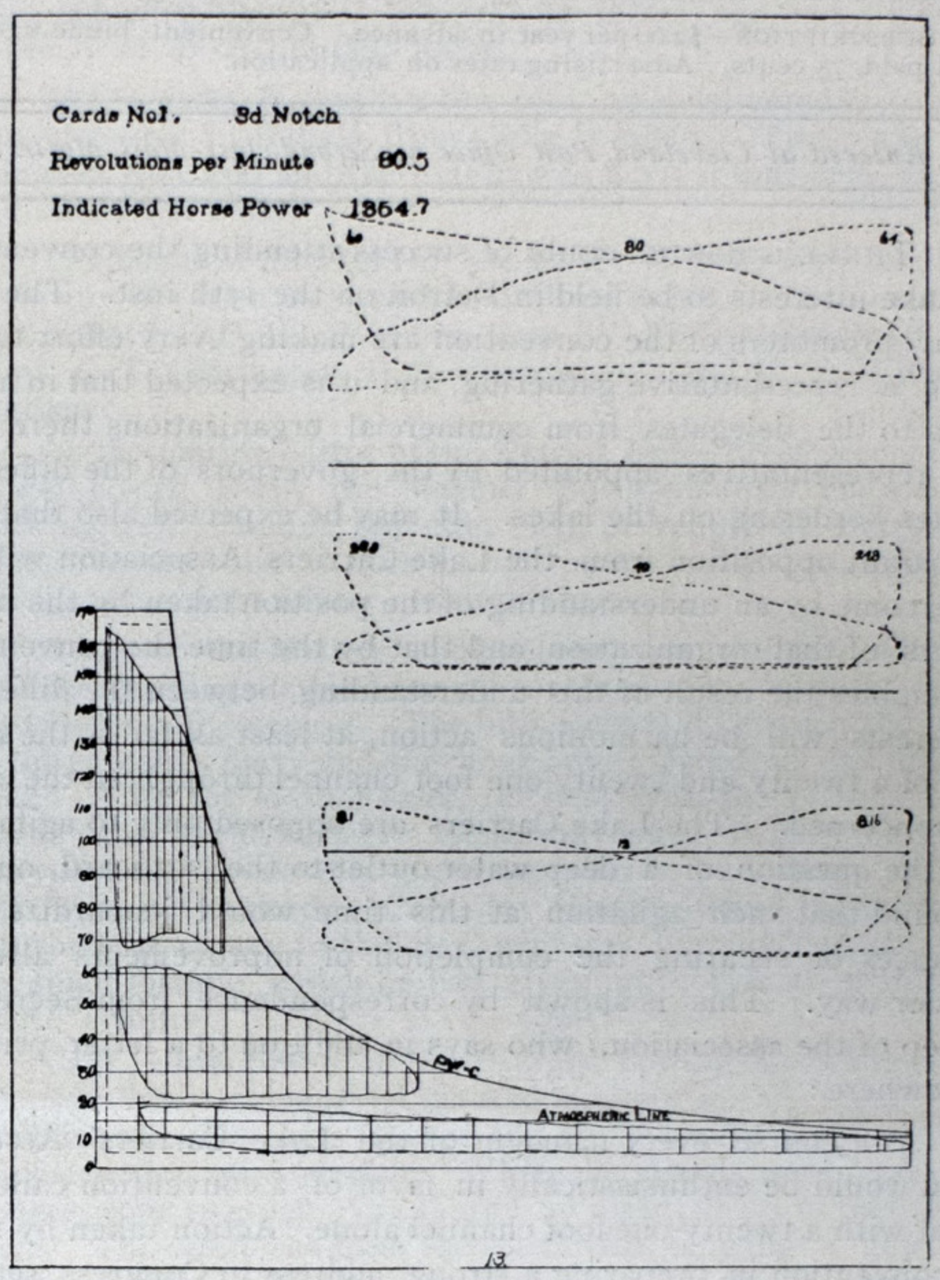
Water in the flooded Hamilton shaft ceased to rise at 80 feet from the surface. New machinery is being put in as fast as possible but the flood of water will greatly retard operations at the mine.

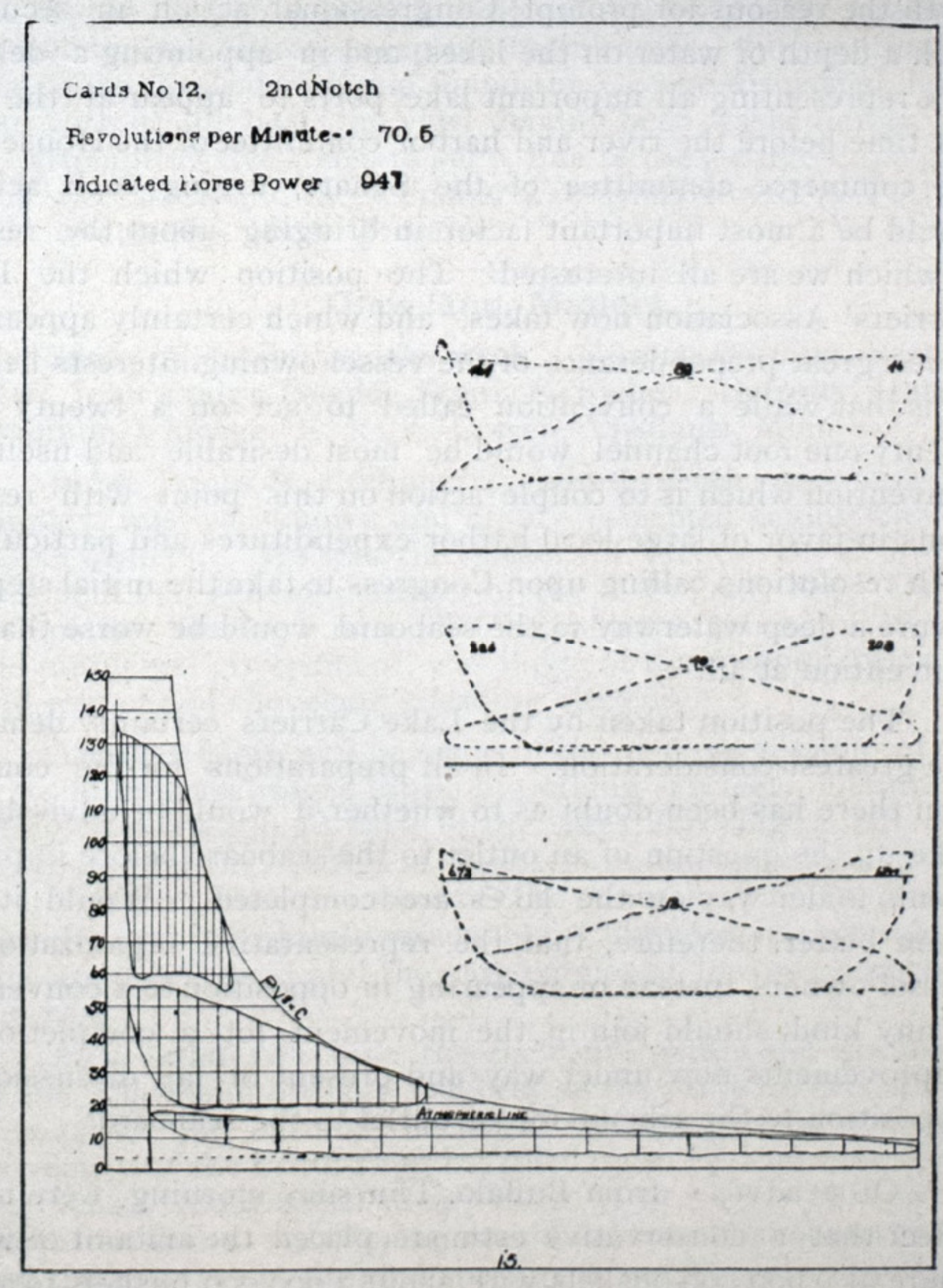
Report of Experimental Trip,

MADE UPON SCREW STEAMER E. P. WILBUR TO THE BUILDERS, THE GLOBE IRON WORKS COMPANY, CLEVELAND, O.,

[BY GEO. C. SHEPARD.]

The last issue contained Table 3, which showed the comparative area of expanded diagrams, indicated horse power, etc. Below will be found the first two card diagrams, and the other two will follow in the next issue.





[TO BE CONTINUED.]

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, ... } PROPRIETORS.
F. M. BARTON, ... }

HOMER J. CARR, - - - Associate Editor and Manager Chicago Office, 210 South Water Street.

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THERE is now no doubt of success attending the convention of lake interests to be held in Detroit on the 17th inst. The Detroit promoters of the convention are making every effort to secure a representative gathering, and it is expected that in addition to the delegates from commercial organizations there will be representatives appointed by the governors of the different states bordering on the lakes. It may be expected also that the apparant opposition from the Lake Carriers' Association will be overcome by an understanding of the position taken by the managers of that organization, and that by the time the convention assembles the result of this understanding between the different interests will be harmonious action, at least as far as the matter of a twenty and twenty-one foot channel throughout the lakes is concerned. The Lake Carriers are opposed only to agitation of the question of a deep water outlet to the seaboard, on the ground that such agitation at this time would jeopardize the chances of securing the completion of improvements already under way. This is shown by correspondence from Secretary Keep of the association, who says in addition to a letter printed elsewhere:

"Of course, every manager of the Lake Carriers' Association would be enthusiastically in favor of a convention called to deal with a twenty-one foot channel alone. Action taken by such a convention in preparing a strong address to Congress, setting forth the reasons for prompt Congressional action in securing such a depth of water on the lakes, and in appointing a delegation representing all important lake ports to appear at the proper time before the river and harbor committee of the House and the commerce committee of the Senate, urging such action, would be a most important factor in bringing about the results in which we are all interested. The position which the Lake Carriers' Association now takes, and which certainly appears to have a great preponderance of the vessel owning interests behind it, is that while a convention called to act on a twenty and twenty-one foot channel would be most desirable and useful, a convention which is to couple action on this point with resolutions in favor of large local harbor expenditures and particularly with resolutions calling upon Congress to take the initial steps to secure a deep waterway to the seaboard would be worse than no convention at all."

The position taken by the Lake Carriers certainly demands the greatest consideration. In all preparations for the convention there has been doubt as to whether it would be advisable to take up the question of an outlet to the seaboard before improvements under way on the lakes are completed. Would it not seem better, therefore, that the representative organization of vessel owners, instead of appearing in opposition to a convention of any kind, should join in the movement for a completion of improvements now under way and present in fair discussion its opposition to the scheme for an outlet to the seaboard?

OUR advices from Buffalo, Thursday morning, were to the effect that a conservative estimate placed the amount of wheat there at 9,000,000 bushels, with about 3,000,000 bushels to arrive in vessels now on their way down. As the movement towards the seaboard affords practically no relief, on account of a great scarcity of cars and most of the grain being consigned to the elevators of the New York Central and Erie railways, some idea can be formed of the trouble that is bound to increase with the additional arrivals of vessels next week and continue for some time to come. The railway managers who made contracts for the transhipment of this grain to the seaboard knew that they could not handle it. They are responsible for the loss to vessel owners, and the determination of Cleveland owners to apply for remuneration and test the question in court if it is not granted will be watched with interest.

A Submarine Boat.

At the yard of the Detroit Boat Works, Detroit, a few days ago the submarine boat, about which a great deal has been written, was launched. The boat was designed by Fred. A. Ballin, naval architect, and is the property of George A. Baker of Chicago, who wishes to use her for testing an invention upon which he has been at work for a long time past. The invention consists in reversible propellers, working on each side of the boat amidships. Their duty is to propel as well as regulate the desired immersion. The boat is 40 feet long, 9 feet wide and 14 feet deep, and was built of wood instead of iron or steel for economy sake. The power is steam, a Roberts safety pipe boiler and Willard engine being used. Compressed air can be stored in the hull.

Notice to Mariners.

The light-house board gives notice that the rear light of the Niagara river range has been transferred to the new structure erected on the range line, 23 feet above the present structure. The structure consists of a triangular skeleton pyramid, painted brown, carrying near the top on its channel face an elliptical gridiron day mark, 8 feet by 12 feet, with slats painted alternately black and white. The elevation and characteristics of the light will remain unchanged.

The office of the inspector of the Ninth light-house district, Commander Nicoll Ludlow, has been removed to No. 1306 Chamber of Commerce building, Chicago, Ill.

In General.

Inland Ocean is the name of a new weekly publication of Superior edited by F. W. Street of that city. An early issue presents several statistical articles carefully prepared.

From Superior it is said that the American Steel Barge Company is planning for the establishment of three shipyards in different parts of the country, in addition to the plants at Superior and Everett, Wash.

Corrugated furnaces are rapidly gaining favor in every industry, and the Continental Iron Works of Brooklyn, N. Y., find orders coming in freely for them. The Lake Erie Boiler Works of Buffalo recently ordered six, to be used in the new boilers they are constructing for the Metropolitan Elevated railway of New York city.

Dec. 1, Buffalo had shipped by lake 2,396,380 tons of hard coal. The port of Superior at the head of Lake Superior had received on the same date 1,140,000 tons of both hard and soft coal. These receipts are entirely irrespective of Duluth and were divided as follows: Lehigh Coal and Iron Company, 485,000 tons; Northwestern Company, 405,000 tons; Silver Creek and Morris Coal Company, 160,000 tons; Ohio Coal Company, 90,000 tons. The great bulk of Superior's receipts is soft coal.

The report of Capt. L. G. Shepard, chief of the revenue marine, recommends, as had been expected, the building of four additional revenue cutters, two for the lakes and two for the Pacific coast. If the cutters for the lakes are built after the plans suggested by members of Congress who last year opposed the building of what was termed a "cheap" boat for Lake Michigan, they will be formidable war vessels. It is proposed to have the two new vessels replace the revenue steamer Johnson on Lake Michigan, and the Bibb, formerly in service on Lake Ontario, but recently condemned and sold.

Send 75 cents to the MARINE REVIEW for a binder that will hold 52 numbers.

History Repeats Itself.

It is a well known fact that within a given cycle of time history repeats itself and oftentimes experiments are tried which have been exploded years before. Many years ago, when freights were low and competition very sharp, there was a great rage on the lakes for cheap outfits, and among the other things that came prominently to the front was the windlass for handling the anchors and chains. Although the Emerson windlass as constructed at that time by the American Ship Windlass Company, had always proved efficient and reliable, the Coffin & Woodward Windlass Company, now extinct, received orders for a large number of their windlasses for the lakes and for the seaboard, simply because they were a trifle cheaper than the Emerson windlasses. In a few years, however, these windlasses proved to be worthless for use on shipboard and they were nearly all taken out and replaced with the windlasses made by the American Ship Windlass Company. Since that time these windlasses made by the latter company have been greatly improved and made more efficient. The windlasses at that time were mostly hand windlasses but since then it has been found cheaper and safer to handle the anchors by steam. The American Ship Windlass Company has spent over a third of a century in perfecting its machines for handling anchors and chains and they have been universally approved and adopted all over the country, and their superiority to anything that ever has been used is today unquestioned. It would therefore seem as though the slight difference in cost was more than compensated for by their superiority in every point required in a reliable windlass. It is true that vessels on the lakes do not often anchor but for this very reason the windlass should be simple and reliable so that it can be used instantly in an emergency, or else the vessel goes ashore and lives and property are destroyed.

The cheap windlasses defeated the aim that they pretended to serve, because in the end they were more expensive and oftentimes had to be replaced by more efficient machines.

Ship owners and ship masters should bear these facts in mind when contracting for steamers, for if these windlasses are called for in the contract they cost no more than inferior machines.

Four Triple Expansion Engines.

The Frontier Iron Works of Detroit has now under contract four triple expansion engines, all of which will contain new features. Two of them will be duplicates having cylinders 20, 32 and 54 inches by 42 inches stroke. These are for steamer No. 121, building by the American Steel Barge Company, and the McBrier-Mitchell boat, No 88 in the yard of F. W. Wheeler & Co. The other two engines are for steamer No. 123 to be built at the yard of the American Steel Barge Company and the steel boat building by Wheeler & Co. for the Hollisters and others. The cylinders of these engines will be the same, 23, 37 and 62 inches, but the stroke of the Hollister boat will be 44 inches while that of the barge will be but 42 inches. All of these big engines will be completed by the opening of navigation in the spring. The Frontier company is also building a compouud engine of 9 and 17 inches by 30 inches for stationary work.

New Boats.

The Cleveland-Cliffs Mining Company has placed a contract for a second boat of medium size. In addition to the steamer building by the Detroit Dry Dock Company, the Chicago Ship Building Company will build for this mining company a boat 230 feet long, 37 feet beam and 19 feet hold. She will have a compound engine with cylinders 24 and 44 inches by 36 inches, and boilers 11 feet in diameter by 14 feet long.

Capt. James Davidson of West Bay City has laid the keel for a third wooden steamer of 300 feet keel, to be a duplicate of the two boats already on the stocks.

Around the Lakes.

Capt. Thomas Burch, well known to vessel men, died in Buffalo a few days ago.

Charles H. Gillespie has succeeded James Carlisle as master of the steamer Milwaukee.

In a single day last week there was shipped from Duluth and Superior 1,004,683 bushels of wheat.

Capt. Thomas Riordan, who was lost with all hands on the canal schooner George C. Finney a short time ago, was a member of the E. M. B. A., Buffalo lodge.

The steamer Norwalk a few days ago delivered 1,400 net tons of copper in Buffalo from Lake Linden. The cargo was valued at $350,000 and the freight was $1.75 a ton, net, free in and out of the vessel.

The board of directors of the F. W. Wheeler Ship Building Company has been increased from three to six. The new board is composed of F. W. Wheeler, Capt. W. Forbes, George F. Williams, E. T. Carrington, F. B. Chesebrough and H. T. Wickes of Saginaw.

As the marine editor of the Detroit Free Press seems to be so well posted about the steamer Susquehanna's engines not working well, claiming that they will be rebuilt at Detroit this winter, he may also be able to explain why she has sailed for Chicago to go into winter quarters there.

A boy on the Mather, sunk recently in collision with the steamer Brazil, gave his season's earnings, $115 in bills, to the captain for safe keeping. The bills were laid between the leaves of the captain's diary and the book was placed in his business desk. After the Mather sank, the desk with the vessel's upper works came to the surface. Somebody rifled it and found the diary but the leaves were glued together by the water and the bills were not noticed. Capt. Jay Hursley found the book and returned the money to the boy, who was overjoyed at obtaining his small fortune, which he had given up for lost.—Sault Ste. Marie Tribune.

Capt. Chris Smith of the Howard Towing Association's tug Alanson Sumner displayed marked bravery in the recent storm in which the schooners George and Kelley were in great danger of destruction off Goderich. When the vessels were reported in distress four tugs left Port Huron by night to go to their assistance. The wind was from the southwest, blowing a gale, and anyone familiar with the Canadian shore of Lake Huron understands the danger of encountering such a sea. The tugs all returned to Port Huron excepting the Sumner. She continued on her course to Goderich and found the George dismasted, leaking and with no life boat, the yawl having been washed away. After attempting five times to get a line to the George Capt. Smith was successful, and the schooner was safely towed to Port Huron.—Sault Ste. Marie Tribune.

Cleveland Matters.

Some callers during the week: Gordon Corning, East Saginaw; John Craig, Toledo; Frank E. Fisher, Detroit; Harry S. Channon, Chicago; E. R. E. Cowell, Ypsilanti, Mich.

Judge James M. Coffinberry, whose death was announced Sunday, was well known and highly esteemed among Cleveland vessel owners. He was the father of Henry D. Coffinberry, president and general manager of the Cleveland Ship Building Company. During a long life of activity he was connected with the municipal government, was judge of the common pleas court and was one of Clevelaud's leading citizens.

Another effort will be made in the coming session of Congress to increase wages in the life saving service. Petitions are being circulated in all parts of the lakes favoring a bill which proposes that the salaries of keepers be increased to $1,000 a year and that other members of the crews be paid $75 a month. The demand is certainly reasonable. The men in this noble service are poorly paid and they are employed for only a portion of the year.

As a harbor of refuge the enclosure within the western arm of the Cleveland breaker has been of no use whatever for some time past. The entrance between the west pier and the eastern extremity of the breakwater has filled up so that no freight carrying vessel could enter in any kind of weather. It is certainly ridiculous that a breakwater should be constructed at great cost and the entrance to the enclosure be allowed to fill up so that the harbor is of no use.

Knots of all Kinds.

A great number of knots have been devised of which a few only are illustrated, but those selelected are the most frequently used. In the engravings they are shown open, or before being drawn taut in order to show the position of the parts. The names usually given to them are :

A. Bight of a rope.
B. Simple or overhand knot.
C. Figure 8 knot.
D. Double knot.
E. Boat knot.
F. Bowline, first step.
G. Bowline, second step.
H. Bowline completed.
I. Square or reef knot.
J. Sheet bend or weaver's knot.
K. Sheet bend with a toggle.
L. Carrick bend.
M. Stevedore knot completed.
N. Stevedore knot commenced.
O. Slip knot.
P. Flemish loop.
Q. Chain knot with toggle.
R. Half-hitch.
S. Timber-hitch.
T. Clove-hitch.
U. Rolling-hitch.
V. Timber-hitch and half-hitch.
W. Blackwall-hitch.
X. Fisherman's bend.
Y. Round turn and half-hitch.
Z. Wall knot commenced.
A A. Wall knot completed.
B B. Wall knot crown commenced.
C C. Wall knot crown completed.

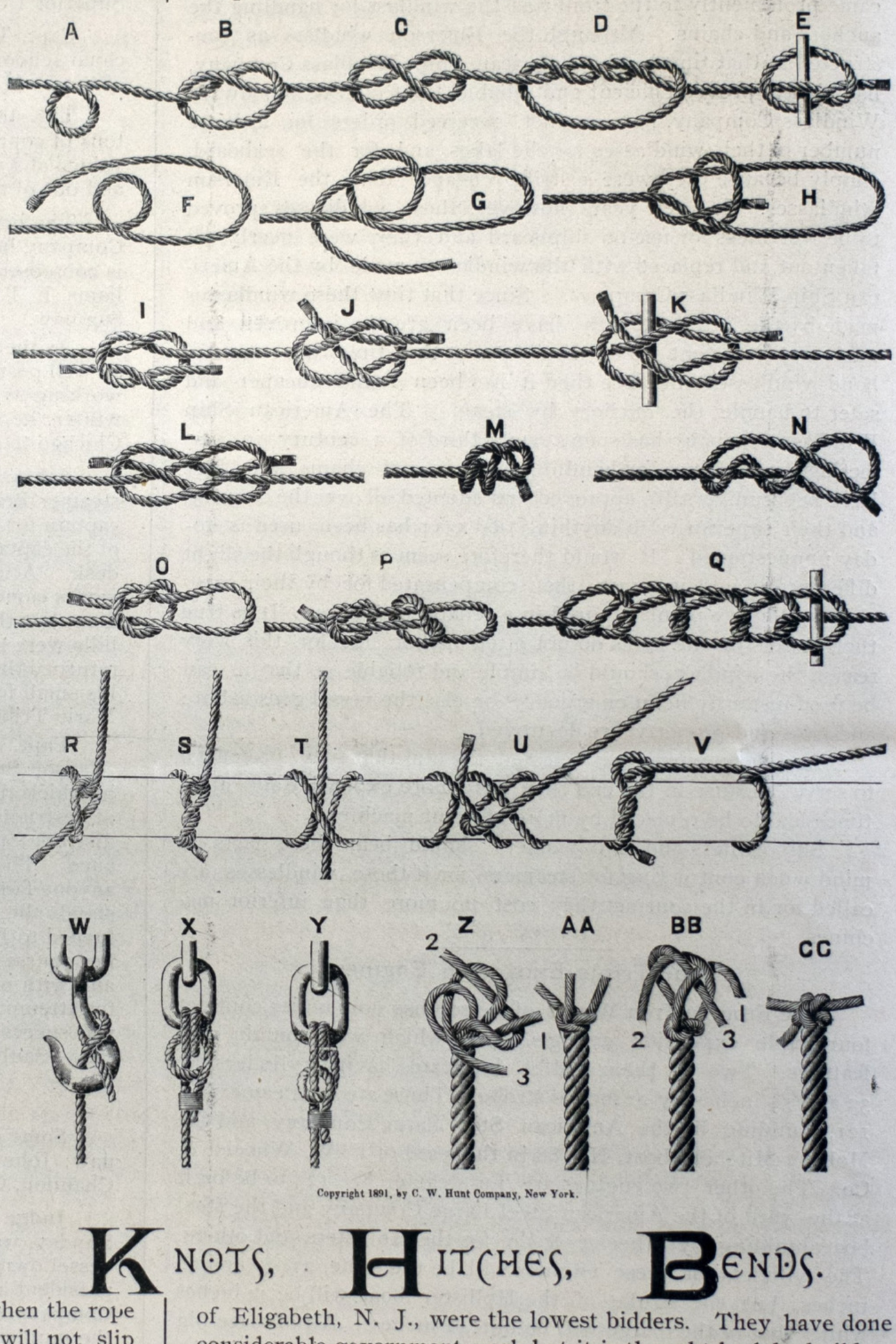
The principal of a knot is that no two parts, which would move in the same direction if the rope were to slip, should lay along side of and touching each other.

The Bowline is one of the most useful knots, it will not slip, and after being strained is easily untied. It should be tied with facility by every one who handles rope. Commence by making a bight in the rope, then put the end through the bight and under the standing part as shown in G, then pass the end again through the bight, and haul tight.

The square or reef knot must not be mistaken for the "granny" knot that slips under a strain. Knots H, K and M are easily untied after being under strain. The knot M is useful when the rope passes through an eye and is held by the knot, as it will not slip and is easily untied after being strained.

The timber-hitch S, looks as though it would give way, but it will not; the greater the strain the tighter it will hold. The wall knot looks complicated, but it is easily made by proceeding as follows: Form a bight with strand 1 and pass the strand 2 around the end of it, and the strand 3 round the end of 2 and then through the bight of 1 as shown in the engraving Z. Haul the ends taught when the appearance is as shown in the engraving AA. The end of the strand 1 is now laid over the center of the knot, strand 2 laid over 1, and 3 over 2, when the end of 3 is passed through the bight of 1 as shown in the engraving BB. Haul all the strands taut as shown in the engraving CC.

The article above was taken from "Manilla Rope," a pamphlet issued by the C. W. Hunt Company, 45 Broadway, New York, who also furnished the illustrations. Send your address to them and mention the REVIEW and you will receive a copy.



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KNOTS, HITCHES, BENDS.

Bids on a Light-house Tender.

Most of the iron ship building plants on the lakes are well supplied with work for the winter and it was probably on this account, mainly, that the builders of this district were not the lowest bidders for the work of constructing the light-house tender Maple, for which bids were opened on the 24th inst. Moore & Sons of Eligabeth, N. J., were the lowest bidders. They have done considerable government work but it is thought by lake builders that they will be money out in this case, as there is a marked difference in the cost of labor on the coast and the lakes. The bids were: Moore & Sons, Elizabeth N. J., $81,000; Wheeler & Co., West Bay City, $87,000; Craig Ship Building Company, Toledo, $89,950; Globe Iron Works, Cleveland, $91,950; J. H. Dialogue, Camden N. J. $94,000; Reader & Sons, Baltimore, $109,950; Pusey & Jones Company, Wilmington, $124,650.

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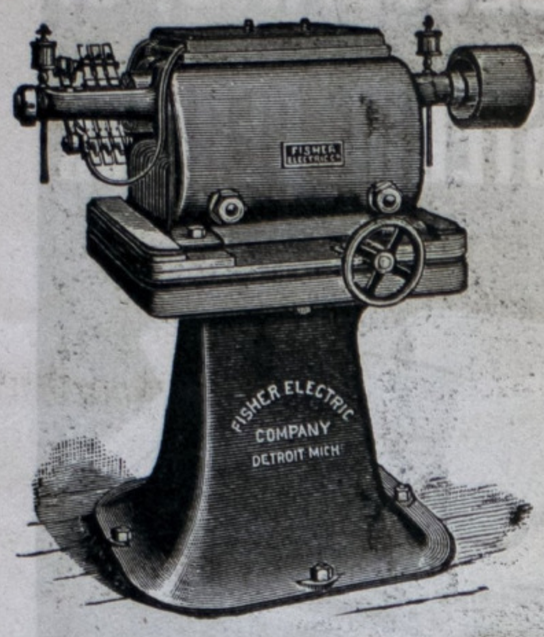

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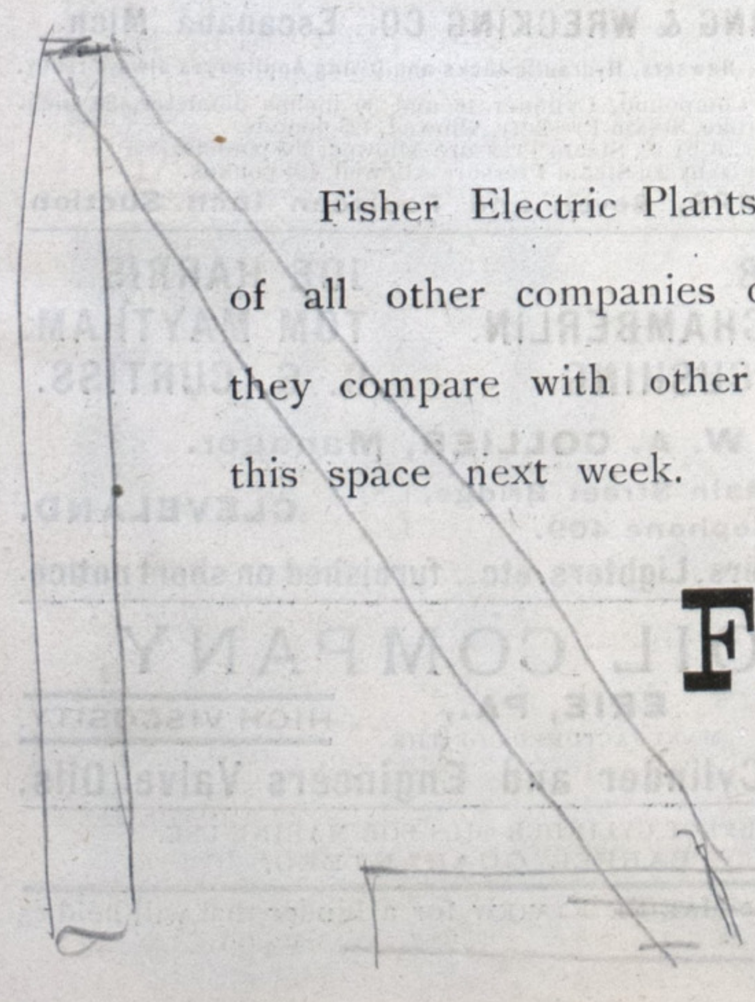

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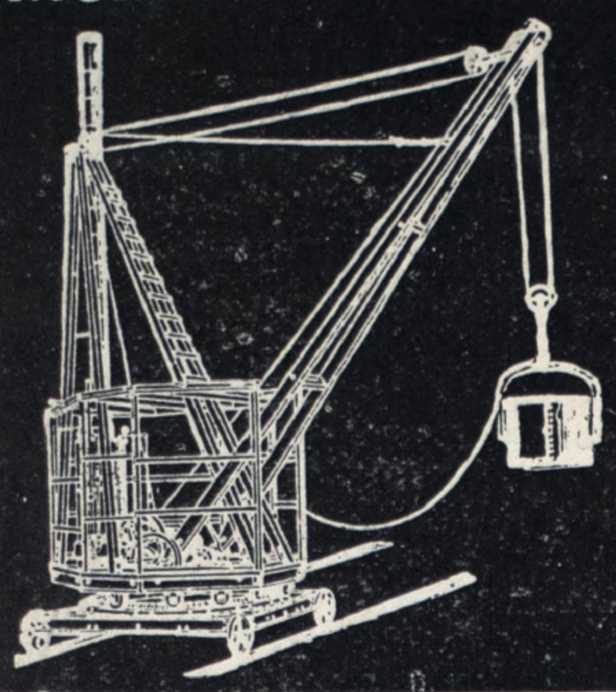

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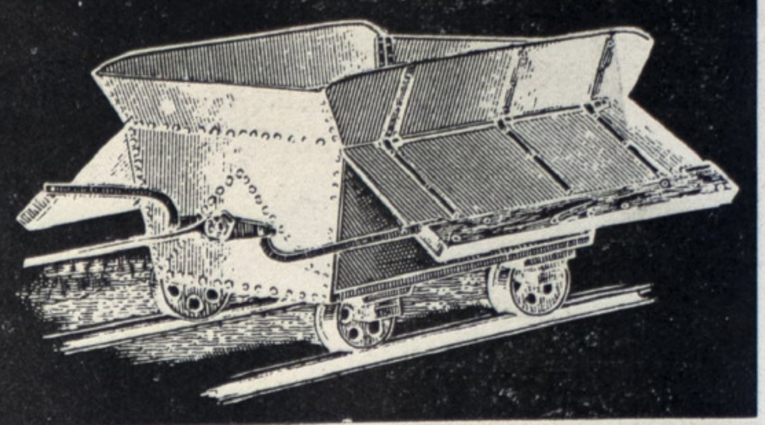

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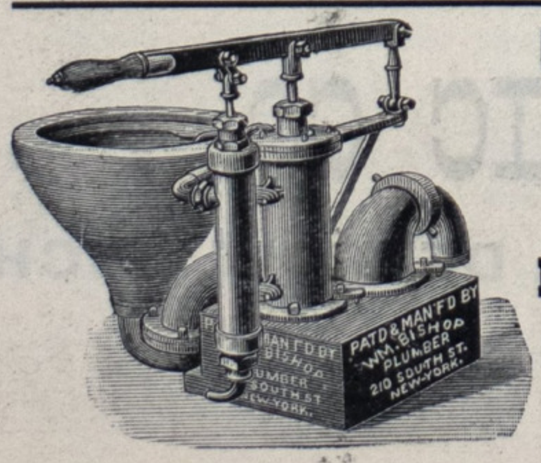

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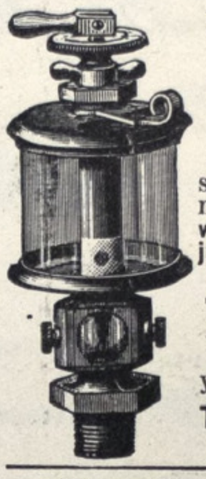

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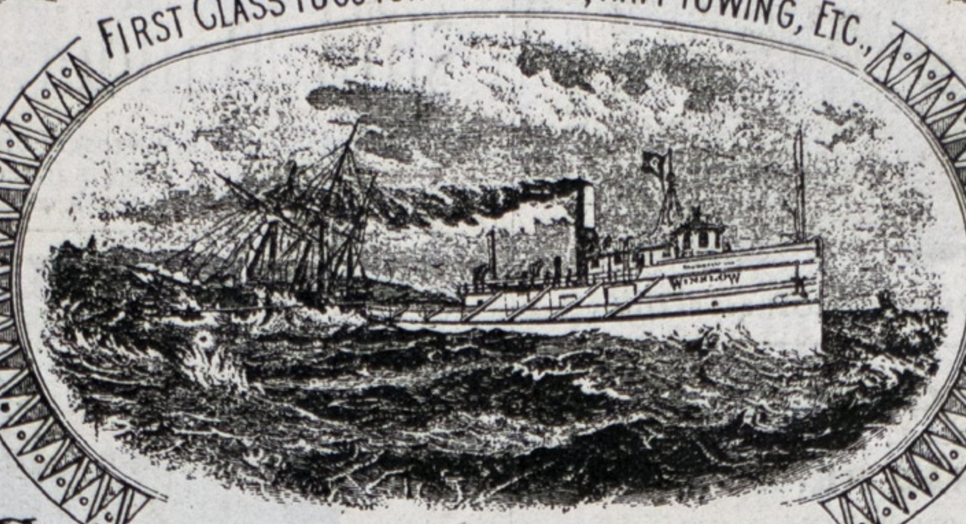

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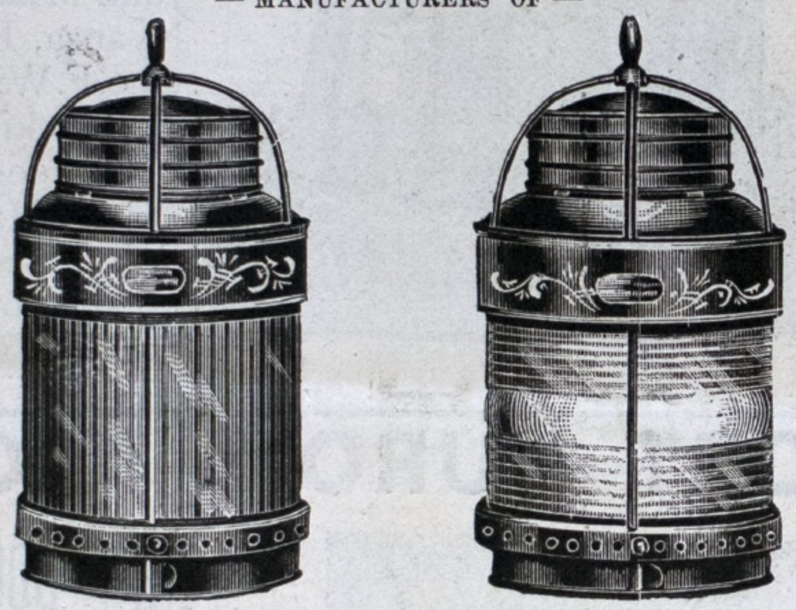

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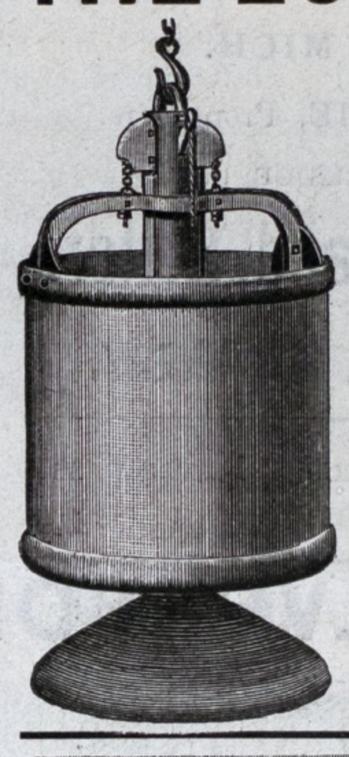

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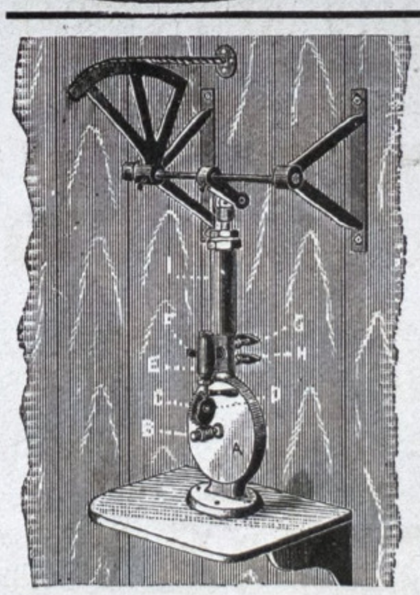

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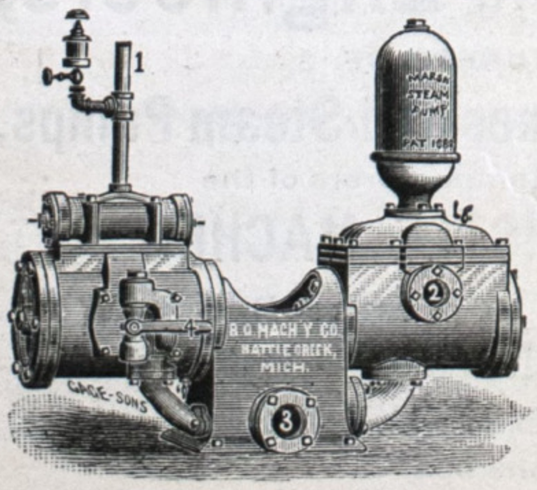

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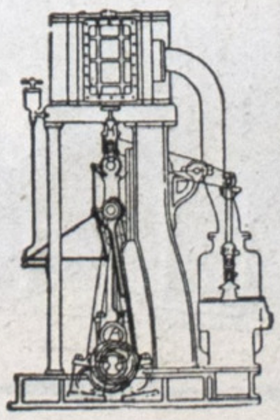

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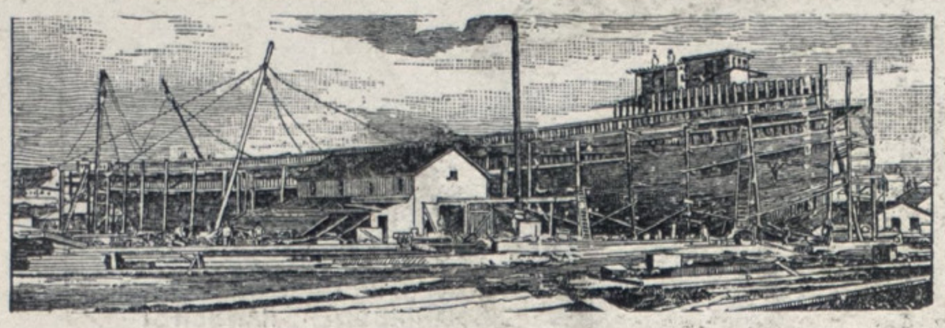

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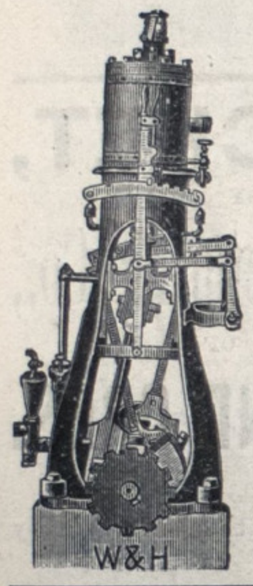

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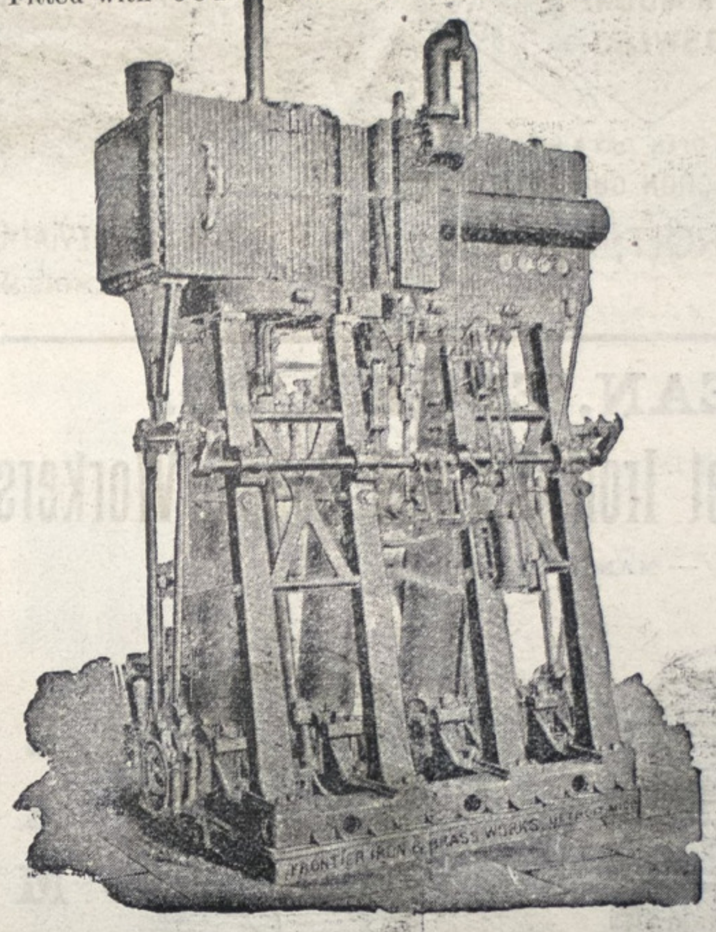

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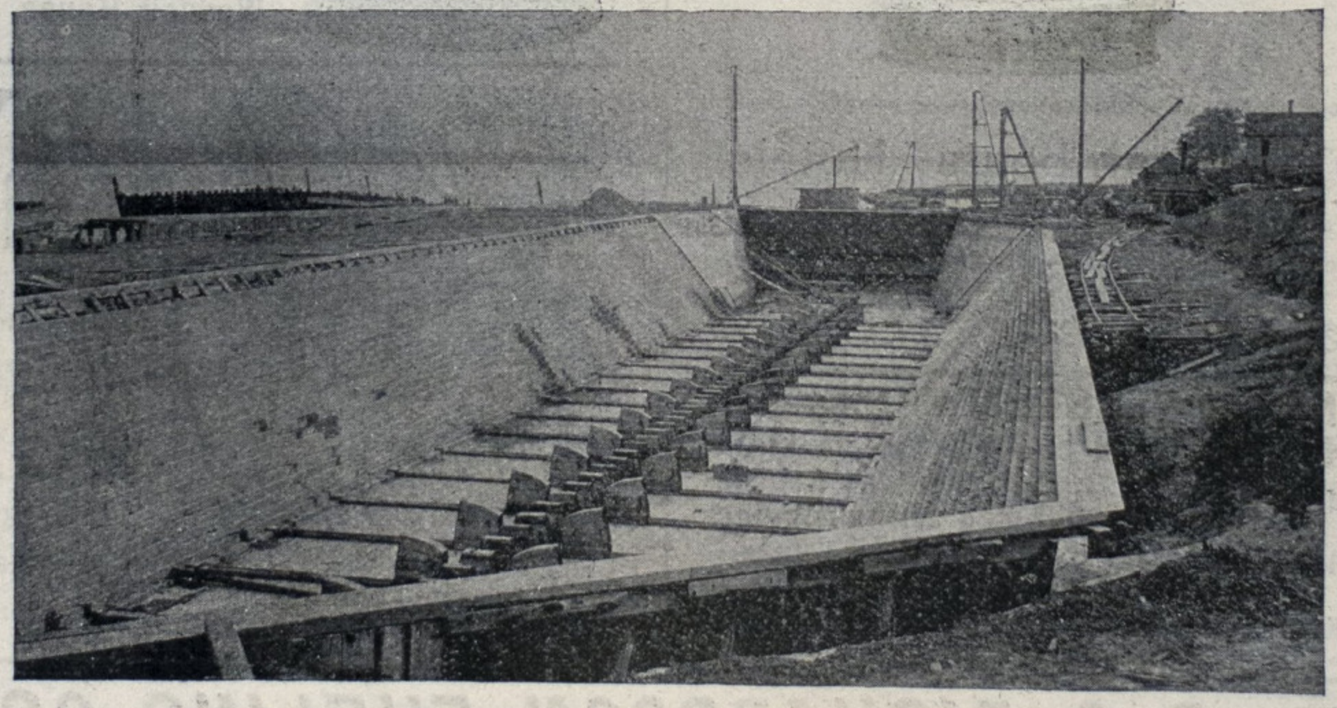

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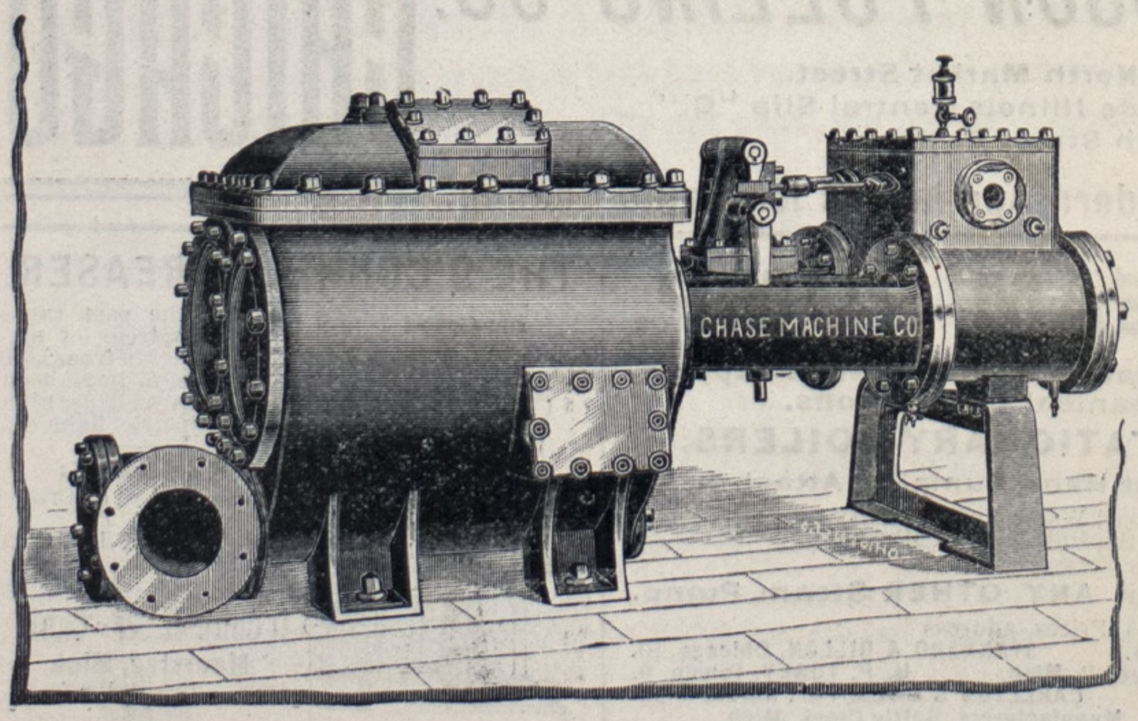

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